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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,634	02/21/2002	Selena Chan	176/61011 (2-11144-1010)	4466

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EXAMINER

FORMAN, BETTY J

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 01/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/082,634

Applicant(s)

CHAN ET AL.

Examiner

BJ Forman

Art Unit

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 22-33 and 35-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6-8 10-15 18 20-21 and 34 is/are rejected.
- 7) ☒ Claim(s) 2-5,9,16,17 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1634

DETAILED ACTION

Status of the Claims

1. This action is in response to papers filed 5 November 2003 in which claimss1 and 10 were amended, Fig. 3A & 3B were amended and Declarations filed under 37 C.F.R. 1.132 was submitted. The amendments have been thoroughly reviewed and entered.

The previous objections and rejections under 35 U.S.C. 112, second paragraph in the Office Action dated 7 August 2003 not reiterated below are withdrawn in view of the amendments. The previous rejections under 35 U.S.C. 102 (a) and (b) not reiterated below are withdrawn in view of the Declarations.

Applicant's arguments have been thoroughly reviewed and are discussed below.

Election/Restrictions

2. Applicant's election with traverse of Group I is acknowledged. The traversal is on the grounds(s) that it would not be undue burden to examine the claims of all groups I-II. However, it is maintained that undue burden would be required to examine the claims of groups II and III along with claims of group I as evidenced by the fact that the claims of groups I, II and III have acquired a separate status in the art as recognized by their different classifications as recognized by their divergent subject matter and because a search of the subject matter of invention I is not co-extensive with a search of inventions II and III.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP §

Art Unit: 1634

821.04. **Process claims that depend from or otherwise include all the limitations of the patentable product** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103, and 112. Until an elected product claim is found allowable, an otherwise proper restriction requirement between product claims and process claims **may be maintained**. Withdrawn process claims that are not commensurate in scope with an allowed product claim will not be rejoined. See "Guidance on Treatment of Product and Process Claims in light of In re Ochiai, In re Brouwer and 35 U.S.C. § 103(b)," 1184 O.G. 86 (March 26, 1996). Additionally, in order to retain the right to rejoinder in accordance with the above policy, Applicant is advised that the process claims should be amended during prosecution either to maintain dependency on the product claims or to otherwise include the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1-21 and 34 are under prosecution.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1634

4. Claim 1, 6-8, 10-15, 18, 20, 21 and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Ghadiri et al (U.S. Patent No. 6,248,539, filed 30 October 1997).

Regarding Claim 1, Ghadiri et al disclose a biological sensor comprising a porous semiconductor structure comprising a central layer (i.e. etched pores, Column 3, lines 38-67) and each of the upper and lower layers including strata of alternating porosity (i.e. alternating from the central layer, see Fig. 1) and one or more probes coupled to the structure wherein a detectable change occurs in a refractive index upon binding of the probe to the target molecule (Column 4, lines 43-57).

Regarding Claims 6-7, Ghadiri et al disclose the sensor wherein the pores have an average pore size of between 10 and 100nm (Column 3, lines 40-45).

Regarding Claim 8, Ghadiri et al disclose the sensor wherein the probe is a non-polymeric molecule e.g. avidin (Column 2, lines 1-14).

Regarding Claim 10, Ghadiri et al disclose the sensor wherein the probe is a protein (Column 2, lines 1-14).

Regarding Claim 11, Ghadiri et al disclose the sensor wherein the probe is a nucleic acid molecule (Column 2, lines 1-14).

Regarding Claim 12, Ghadiri et al disclose the sensor further comprising a coupling agent for attaching the probe to the semiconductor structure (Example 1, Column 7, line 58-Column 8, line 38).

Regarding Claim 13, Ghadiri et al disclose the sensor wherein the coupling agents are silanes (Example 1, Column 7, line 58-Column 8, line 38).

Regarding Claim 14, Ghadiri et al disclose the silane is selected from the claimed group (Example 1, Column 7, line 58-Column 8, line 38).

Regarding Claim 15, Ghadiri et al disclose the sensor wherein the probes comprises a plurality of binding sites one which binds to the target (i.e. sequence) and one which binds to the coupling agent (Example 1, Column 7, line 58-Column 8, line 38).

Art Unit: 1634

Regarding Claim 18, Ghadiri et al disclose the sensor wherein one or more probes are the same i.e. multiple copies of each probe (Example 1, Column 7, line 58-Column 8, line 38).

Regarding Claim 20, Ghadiri et al disclose the sensor wherein the probes comprise two different probes i.e. DNA-A and DNA-B (Example 1, Column 7, line 58-Column 8, line 38).

Regarding Claim 21, Ghadiri et al disclose the sensor wherein the porous semiconductor structure includes at least two zones, one of the two or more probes being bonded to the porous semiconductor structure within a first zone and another of the two or more probes being bonded to the porous semiconductor structure within a second zone (i.e. the probes are bound to a different silane functional group and therefore to a different zone as claimed, Example 1, Column 7, line 58-Column 8, line 38).

Regarding Claim 34, Ghadiri et al disclose a detection device comprising the sensor of Claim 1 and a source of illumination and a detector (Example 3, Column 8, lines 48-64).

Response to Arguments

5. Applicant argues that Ghadiri teaches a relatively consistent porosity but does not teach a “porous semiconductor microcavity positioned between two Bragg reflectors i.e. having alternating strata of higher/lower porosity” and therefore, Applicant argues, Ghadiri does not teach the claimed invention.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., “microcavity”, “microcavity positioned between two Bragg reflectors”, “Bragg reflectors”, “strata of higher/lower porosity”) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The claims are drawn to a porous semiconductor having an upper layer, central layer and lower layer wherein the layers have alternating porosity. Applicant seems to suggest that the claims require that the porosity alternates between the layers such that the upper and

Art Unit: 1634

lower layers have different porosity. However, the claims do not require different porosity for each layer, but instead broadly defines the layers as having alternating porosity. The instantly claimed alternating porosity is given its broadest reasonable interpretation (see: *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997); *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969); and *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (see MPEP 2111)).

Ghadiri teaches their porous layer have “relatively consistent porosity” which means that within some relationship, the porosity is consistent and within some relationship, the porosity is not consistent i.e. alternating. Given the broadest reasonable interpretation, the “relatively consistent” porosity of Ghadiri is encompassed by the instantly claimed alternating porosity.

6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 1634

Conclusion

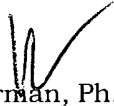
7. Claims 2-5, 9, 16, 17 & 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. No claim is allowed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741 until 13 January 2004. The examiner can normally be reached on 6:00 TO 3:30 Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-0507.


BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
January 21, 2004